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**ECONOMY IN  
SECONDARY EDUCATION**

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## EDITOR'S INTRODUCTION

THE comparative study of educational efficiency is one of the most fruitful means of criticism at the disposal of the trained educator. That it has not been used adequately is due to our professional ignorance of contemporaneous educational practice. That it has not been used wisely is due to the fact that it has been most frequently employed by fascinated travelers rather than by trained thinkers.

The influence of foreign school systems on American educational practice has not been altogether fortunate. Too often we have been overzealous in the imitation of European methods. Differences of social aims and conditions have not been taken into account sufficiently. We have copied enthusiastically when we should have compared critically. The indictment does not fall on the worth of comparative education as a professional discipline; it is a reflection on the mental processes of those who have naïvely

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observed and loudly proclaimed the achievements of German, French, and English institutions.

The study which follows is a sample of discriminating judgment in estimating foreign and domestic practice in terms of relative worth. It is throughout sensitive to differences of national purpose and condition. It suggests with rare power of analysis what of European practice is applicable to a particular problem in American educational life, and does it with clear understanding of necessary modifications. It is a fine use of educational experience in the solution of current issues.

The difficulties of using educational experience, both contemporaneous and historic, should not deter us. In achieving true progress, that advance accompanied by the least waste effort, it is necessary to bring all available experience to bear. But the experiences of our historic and contemporaneous life never offer us direct prescriptions. They are somewhat stubborn in their yield of applicable truth. Success and failure are generally complex. A competent analytic mind must break them up into their constituent

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elements, and weigh the relative influence of each component factor. An efficient adaptive mind will then know which elements to omit or modify, and how to create a new synthesis suitable to American life.

In spite of a rapid introduction of the experimental method in education, it is probable that we shall likewise make an increasing use of comparative methods in the interpretation of our gross practical experience. There is a normality about our institutional adaptations, however defective they may be, which purely experimental work seldom possesses. Experiment is artificial at best. The conditions are prearranged to give ease of interpretation, but the experience itself is not so practical and wholesome. Our pragmatic, day-to-day adaptations presumably take into account all the factors, but we are baffled to know just how we get results. Here analysis and interpretation are exceedingly difficult. It seems then that the experimental and the comparative methods must be made supplementary means in the clarifying of educational theory and the improvement of teaching practice. One will be

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powerful in indicating the true influence of specific factors, and the other in suggesting the way in which complexes operate in the face of total situations. The range of truth rendered by experimentation will necessarily be limited. Its generalizations will often be isolated. To cover the intervening ground we must rely on the best study we can make through comparison. In no other way can we bring the fullest wisdom to bear upon practical procedure.

# ECONOMY IN SECONDARY EDUCATION

## I

### THE PROBLEM OF ECONOMY

ECONOMY in education means the transfer to the pupil, in the fewest years and in the most thorough manner, of a certain relatively complete fund of knowledge and a group of habits and methods of work which are likely to prove useful in the life he is to lead. Time is not the only consideration. If our education is scattered and superficial, no matter how long studied, it is uneconomical. If the progress of the gifted is retarded because of the drag of the average group, it is uneconomical. There is no economy in a system of schools where there are many pupils leaving before graduation, whose education on that account is fragmentary and unbalanced. Further, if our education fails to leave a boy or girl with a fund of useful knowledge, or if it fails to



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equip him with habits or methods of work useful in life, the time spent in acquiring it might better have been used in some other way.

It is charged that the American secondary school is wasteful, that it is prodigal of the time of the youth of our land. This indictment is based, in general, upon the results of the study of foreign school systems and upon thoughtful consideration and investigation of the success of American secondary schools in meeting the needs of life in a democracy. The usual arguments run as follows: (1) The secondary schools of Germany and France complete a boy's cultural education at the age of eighteen, granting him immediate entrance to the professional schools of the universities. At this age the equivalent of two years of our college work has been completed, and it is almost the universal opinion of observers that this work has been done in a far more thorough and scholarly fashion than in this country. (2) The German and French schools, through their "Cycle System," make some provision for the pupils who drop out, encouraging them to remain until certain breaking points,

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where for the time being the work comes to a logical end. In this country we aim our whole system of education at the graduate, forgetting completely the great majority who fail to complete the course. (3) Students of secondary education also maintain that our curriculum is not vital; that sciences, languages, mathematics, history, English, and even agriculture, home economics, and manual training, are taught with little bearing upon practical consequences.

In brief, therefore, we are charged, in comparison with other systems, of using more time in which to teach less; that much of the little which we teach is given in no thorough manner, or worse still, has no connection with the world at large; and that of the small results of our education, only the graduates of our schools are in a position to benefit thereby. This is a severe indictment.

In order to arrive at the truth of the matter, it is well to examine in a fair and impartial way our own system and certain especially successful features of the systems of foreign countries, keeping our attention fixed upon the ways in which

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the time and efforts of the pupils are economized, that we may see if some modifications of such practice are worthy of adoption in the secondary schools of the United States.

In the first place, how much earlier do foreign boys actually finish their course? The usual arguments speak of the German boy graduating from the secondary school at the age of eighteen, academically two years ahead of his American cousin who finishes the high school at the same age. Eighteen years is not a fair estimate of the average age of the American high-school graduate. Bright boys often finish at this age or earlier, but the average is nearer nineteen. The same variation is true of the German and French schools, although no complete authoritative study is available. In Germany only the brightest boys are able to advance each year without repeating a class. Dr. Thomas Alexander, whose study of the German schools is soon to be published, found upon inquiry in the senior class of the *Gymnasien* and *Realgymnasien* in Stettin, Koenigsberg, Posen, Danzig, Hildesheim, Hanover, Swinemünde, Weimar, Dortmund, Leipsic,

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Mannheim, and Berlin, that less than twenty per cent of the boys were completing their course on schedule time. In the Friedrich-Wilhelms Realgymnasium at Stettin, the average age in classes for 1913 was as follows: —

|                       | <i>Easter Class</i> | <i>Michaelmas Class</i> |
|-----------------------|---------------------|-------------------------|
| <i>Vorschule—</i>     |                     |                         |
| 3                     | 7.2 years           | 6.7 years               |
| 2                     | 8.1                 | 7.5                     |
| 1                     | 9.4                 | 8.8,                    |
| <i>Realgymnasium—</i> |                     |                         |
| 6                     | 10.6                | 10.0                    |
| 5                     | 11.8                | 11.4                    |
| 4                     | 12.9                | 12.4                    |
| u3                    | 14.1                | 13.5                    |
| o3                    | 15.4                | 14.9                    |
| u2                    | 16.4                | 16.2                    |
| o2                    | 17.0                | 16.6                    |
| u1                    | 18.3                | 17.3                    |
| o1                    | 19.0                | 19.0                    |

The general fact that more than one year separates each group indicates retardation. The small difference between *Untersekunda* and *Obersekunda* is due to the breaking point there provided, many of the duller and older boys remain-

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ing to this point merely to pass the examination allowing them the privilege of serving but one year in the army as a volunteer.

The graduates of the same school at Michaelmas, 1912, were distributed as follows: One was eighteen; five, nineteen; three, twenty; and one, twenty-two. At Easter, 1913, the distribution was as follows: One was eighteen; three, nineteen; six, twenty; two, twenty-one; and one, twenty-two. These data are given only to illustrate a fact remarked upon by observers, that German boys in few instances finish at the age of eighteen, and that nineteen or twenty or more constitute the usual ages.

In short, only the brightest boys graduate from the German secondary schools; the others fall by the way, especially at the close of *Unterssekunda*. The average age of such graduates is more than eighteen, probably between nineteen and twenty. The academic standing of such graduates is approximately equivalent to that of a student in the American college who has completed his sophomore year. Therefore, the brightest boys of the German secondary schools, the



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children of a select group, enter professional study at the age of twenty. So do many American boys. Some few German boys graduate at eighteen. Some few American boys may be found in the junior class in college at the same age. The economy in the German system, therefore, is not so much that it places all its boys in American college junior standing ready for professional work at an earlier age than in this country, but rather that its brightest boys are encouraged to advance rapidly; while for the great majority the economy is not so much in fewer calendar years of work as it is in more and better work done in more time.

How much work, then, has the foreign secondary schoolboy done? Estimating in terms of "units" (meaning five forty-five-minute periods a week for one year), the German boy graduating from the *Gymnasium* has completed four units of religion, five units of German, thirteen units of Latin, seven units of Greek, four units of French, three units of history, two units of geography, seven units of mathematics, four units of natural science, and two units of drawing, to say nothing

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of gymnastics and singing and electives in Hebrew and English.<sup>1</sup> In the *Realgymnasium* and the *Oberrealschule* quite as great a total number of "units" is done, the only difference being less emphasis on linguistic studies, and proportionately more emphasis on mathematics and science. On the same basis, at graduation from the classical course, the French boy has completed a total of six units in French, seven in Latin, four in modern languages, three in Greek, four in history and geography, three in mathematics, two in natural science, two in drawing, and two in philosophy. In other elective courses of study a different distribution of units would occur, but the general total would remain approximately thirty-three. The character of the work done is comprehensive, and it is pursued in a scholarly manner. With these facts in mind, there can be no doubt that German and French boys cover

<sup>1</sup> The term "unit" is used to simplify the data. The reader must take into account several facts: (1) The school year in the German schools is two hundred and forty days, thirty-three per cent longer than in the United States. (2) Methods in the foreign schools require much of the "home work" to be done in class. (3) Much of the work counted is done in classes corresponding to our elementary schools.

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more ground than do the graduates of our high schools; and while the average group does this work in no less time than the average group in the United States, bright boys are encouraged and scheduled to finish at the age of eighteen.

There are certain distinctive features of the organization and administration of these European schools that contribute to this economy. More time is devoted to study than in the United States. The curriculum is unified, unbroken, and designed for professional life. The methods of teaching point continually at the ends that the nation has in view. While German and French systems of education are designed for conditions much different from ours, and while it is a very common fallacy to advocate immediate adoption of foreign measures, often totally unsuited to the conditions and aims of education in our country, it is probable that adaptations of these good features may be introduced to the betterment of the secondary schools of the United States. The following chapters consider this in detail.

## II

### ECONOMY THROUGH AN INCREASE OF TIME DEVOTED TO STUDY

IN Germany the boy or girl goes to school two hundred and forty days in the year, while in America the school year rarely exceeds two hundred days in length. As a matter of fact, few of our schools average more than one hundred and seventy working days. The German system, through the sixty to eighty additional days, effects a saving of from three to four school years in the twelve years of attendance. The German boy works six days a week, beginning at seven in the morning in the summer and at eight in the winter, continuing for the morning session until twelve or one o'clock. There is also an afternoon session. Each boy is occupied during his entire time in school: there are no study periods. Proceeding upon the frequent-rest theory of fatigue, there is a varying period, averaging fifteen minutes, allowed between classes. In this country

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twenty to twenty-five forty-five-minute periods is considered a normal load. The German boy carries from thirty-two to thirty-six; the French boy, from twenty-six to thirty-eight. With more work done in school each day, with a clear gain of from seven to nine hundred working days in twelve years, with classes starting and stopping promptly, with no time wasted in study periods, the mere fact that more time is devoted to study appears as a considerable factor in enabling their pupils to do work in advance of our students, and incomparably beyond it in thoroughness.

Shall we introduce these mechanical time-savers in our schools, increasing the time devoted to school work?

We should unquestionably save time if we were to lengthen our school year. The long summer vacation is not needed for purposes of efficiency. There is a question, indeed, if it is not positively harmful to take pupils out of habits of work and study for three months. The period of rest is now needed, that teachers may receive the further training that they should have had at the start; but institute work, correspondence study,



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part-time work, and occasional years devoted to study can care for that. The pupil would be quite as well off with a shorter vacation, or with better distributed short vacations. Many of our secondary schools have already lengthened their school term through the introduction of short summer courses, and the encouragement of work at summer camps. The demand for such work is shown in the all-year term of business colleges and in the popularity of Y.M.C.A. classes. The difficulty with this work is that it is usually designed for the dullard who is seeking to satisfy examinations in which he has failed. Our school programs are rarely so arranged that able and ambitious pupils may do advanced work at these periods and receive proportionate credit. The simplest way in which to save time would be to introduce the year-round school, somewhat on the plan of the University of Chicago, with shorter and better distributed vacations. Our four-year course could then be completed in three. The expense, greater at first, would in reality become less, because of the greater and more constant use of the expensive school plant.

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Why should not able-bodied boys and girls work six days a week? A large part of the afternoon is always free. German boys are glad to receive two afternoons a week. The West Pointer, at liberty for a little while on Wednesday and Saturday afternoons, thrives under his system. The application of the investigations of psychological and physiological fatigue will result in spreading out the work more evenly, with short and frequent periods of rest, rather than in grouping the hard work in a few days. The problem will lie in a selection of better-chosen intervals of rest, and in a wiser apportionment of work between the home and the school.

Critics of secondary education have long suspected that something is wrong in a system where the class exercise consists largely in testing knowledge gained in unsupervised study in vacant periods in school, and in homes where few pupils have uninterrupted opportunity quietly to pursue their studies. Pupils are too often poorly prepared for their class work. The mere observation of children beginning their tasks in the usual study period or in the home is sufficient

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to show that greater economy might be practiced here. The real solution probably lies in better teaching methods. The possibility that a better arranged school day may help to solve this difficulty warrants its consideration here.

High schools have encouraged teachers in charge of study halls to institute more effective supervision. Talks on "How to Study" have been designed to help the student to help himself. Principal Wiener, of Newark, New Jersey, claims conspicuous success for the plan which, through the lengthening of the recitation period, permits half the time to be used in effective study under the immediate direction of the classroom teacher. An extra period for further study is also provided at the close of the day. This plan in operation, according to Principal Wiener, has greatly reduced the amount of study needed at home through more efficient school study. It has also resulted in added interest and greater success on the part of the pupils, and consequently has aided in the practice of economy. The lengthening of the school day, admitting of more efficient preparation for the recitation, is thus

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claimed to have beneficial results. It may mean, where it is efficiently applied, that it will enable pupils to carry more work than is now the usual case.

Even under the present plan, where pupils recite upon four subjects each day, preparing the same in the noise, bustle, and divided attention of the study hall, and all too often under unfavorable conditions at home, it is probable that economy could be practiced through a more just distribution of work carried by pupils. High-school pupils vary in capacity. There must be certain pupils unusually gifted who can carry five important subjects with less strain and effort, and more success, than certain dull pupils can accomplish with three. When our schools were less well organized, able pupils were not forced to keep step with the great mass. They were allowed to advance as their abilities allowed, and thus bright boys entered professional life at an earlier age. With our present system of units, certification, and uniformity, it is difficult for principals to recognize differences of ability, and having recognized them, to provide for them.

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With a better-arranged school day, with better-chosen intervals of rest, with programs arranged to provide for varying types of work, more pupils ought to be able to carry a larger number of courses than at present, while the great average group should be able more efficiently and more thoroughly to carry the normal amount.

It is possible, therefore, even under the present organization, to economize time and effort, through the mere details of mechanical administration. We may secure added thoroughness and prepare our pupils more completely at an earlier age, if we merely lengthen the school term, extend the day, and arrange it better. For pupils who are to drop out of school, added work can be covered in a given time; while the brighter pupils, preparing for professional life, can thus enter advanced work at an earlier age.



### III

#### ECONOMY THROUGH THE ORGANIZATION OF THE PROGRAM OF STUDIES

IN France and Germany, as well as in almost every important country in the world, secondary education designed for the children of the upper classes runs parallel with elementary education, the education of the poorer classes. The boy enters the secondary school at the age of six, in Germany going into the *Vorschule*, in France to the *classe enfantine*. There is no break in his education. He starts in upon one system, designed to prepare him for professional life or governmental service. This plan has two great advantages. It allows a child to start important subjects at an early age, and, by the cumulative effect of continuous application, achieves results far in advance of those achieved by children in this country. It so groups subjects that at breaking points, which are provided, a pupil may leave

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school before the completion of a course, and still receive a reasonably complete training.

The German boy starts Latin in the class corresponding to our fourth grade. He starts his first modern language at the same age. Plane geometry is introduced in the class corresponding to our sixth grade and the second modern language in our seventh grade. The chart on page 19 shows the comparative progress in mathematics and Latin of American, German, and French boys of the same class, and almost of the same ages. That the essentials of our high-school course are completed in the class corresponding to our ninth grade or first-year high school is due in part to the mechanical saving of time, in part to better methods, but in a large degree to the one unbroken course of study, leading from the first grade to the university, and the more continued attack at subject-matter which is thereby effected.

The second economy afforded by the unbroken course of study deserves more extended treatment. The German Imperial Government, realizing that all the boys, even of its selected group,

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## STUDIES PURSUED BY AMERICAN, GERMAN, AND FRENCH BOYS OF THE SAME GRADE <sup>1</sup>

| Normal age | United States |                         | Germany   |   | France  |  |
|------------|---------------|-------------------------|---|---|---|--|
|            | Latin         | Math.                   | Latin   | Math.   | Latin   | Math.  |
| 9-10       |               | Arith.                  | Grammar   | Arith.  |   | Arith.                                       |
| 10-11      |               | Arith.                  | Grammar   | Arith.  |   | Arith.                                       |
| 11-12      |               | Arith.                  | Nepos<br>Viri Romæ  | Arith.<br>Pl. Geom.                           | Grammar<br>Viri Romæ  | Arith.                                       |
| 12-13      |               | Arith.                  | Cæsar I-IV  | Pl. Geom.                                     | Viri Romæ   | Geometry                                     |
| 13-14      |               | Arith.                  | Ovid<br><br>Cæsar V-VII                                   | Com. Arith.<br>Geometry<br><br>Algebra        | Nepos<br>Nepos<br>Cæsar<br>De Senec-<br>tute<br>Virgil I-III<br>Ovid                | Geometry                                     |
| 14-15      | Grammar       | Algebra                 | Livy XXI-XXII<br><br>Virgil VI                            | Geometry<br>Trig.<br><br>Logarithms           | Cicero<br>Cataline<br>Archias<br><br>Livy<br>Virgil                                 | Algebra<br>Loga-<br>rithms<br>Solid<br>Geom. |
| 15-16      | Cæsar         | Algebra<br>Geom.        | Livy XXII<br>Cicero<br><br>Roscius<br>Virgil              | Plane Trig.<br>Solid Geom.<br><br>Higher Alg. | Cicero<br>Livy<br>Tacitus<br>Pliny<br>Virgil IX-<br>XII<br>Horace                   | Algebra<br>Solid<br>Geom.                    |
| 16-17      | Cicero        | Algebra<br>Geom.        | Tacitus<br>Cicero<br>Horace                               | Solid Geom.<br>Spher. Trig.                   | Cicero<br>Livy<br>Sallust<br><br>Tacitus<br>Seneca<br>Virgil<br>Lucretius<br>Horace | Algebra<br>Trig.<br>Des.<br>Geom.            |
| 17-18      | Virgil        | Solid<br>Geom.<br>Trig. | Tacitus<br>Cicero<br>Horace<br>Sallust<br>Livy<br>Curtius | Anal. Geom.<br>Higher Alg.                    | Special<br>work   | Anal.<br>Geom.                               |

<sup>1</sup> In each case this is a possible course for an individual taking both subjects. As a general thing, however, no student would study both Latin and mathematics with this degree of thoroughness.

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will not be able to finish the course, and understanding the dangers of planning the course solely for the graduate, when seventy-five per cent drop out before graduating, has introduced a system encouraging pupils to remain in school until certain points, placing a reward for the completion of that amount of work. The German boy who passes the examination at the close of *Untersekunda* at the age of sixteen or seventeen is required to serve but one year in the army as a volunteer, a privilege which is eagerly sought for.

The *Arrêté* of 1902, reorganizing the French secondary schools, recognized the same principle, and instituted a break in the course at a corresponding place. Boys dropping out in these schools at this point have finished a study of the history of the world; have completed three and sometimes as much as six years' work in two languages; have mastered the fundamentals of arithmetic, algebra, geometry, and trigonometry, and have had good training in science. The work of those who continue is largely the supplementation and expansion of that which has gone before.

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Fifty per cent of those eliminated drop out at this one place.<sup>1</sup>

In order that the workings of this "Cycle System" may be examined in greater detail, the course in history in the boy's secondary schools of France is given.

*The Preliminary Cycle* covers the work in the preparatory classes, and in the eighth and seventh forms,<sup>2</sup> from the age of six to eleven or twelve. After two years' work, consisting of "stories and familiar conversations about the great historical characters and the principal facts of national history,"<sup>3</sup> systematic study is made of the history of France from earliest times down to 1871. The point of view is largely political, dealing with battles and martial heroes, territorial extension and governmental changes. Occasional digressions are made in the consideration of such topics as "Charlemagne's relations with

<sup>1</sup> Russell, *German Higher Schools* (New York, 1905), p. 174. Farrington, *French Secondary Schools* (New York, 1910), p. 146.

<sup>2</sup> "Form" is an arbitrary term used for clearness. Hence "*sixième*" is translated as "sixth form," etc.

<sup>3</sup> England, Board of Education, *Special Report* (1911), vol. 24, p. 26.



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the schools," "the economic conditions of the people under Louis XIV," "the coming of the steamboat and the railroad," and "the opening of the Suez Canal." This completes the preliminary cycle, and, should a boy be compelled to leave at this time, being greatly retarded, he would already have in a small way an outline of the complete history of France. Should he proceed, he has completed a course in national history sufficient to serve as a background for the more intensive work to come. That he does build on this knowledge is shown by the fact that the notebooks which he prepares at this period at the dictation of his teacher serve as the outlines of the work which is to follow in the higher classes.<sup>1</sup>

*The First Cycle* covers a period of four years devoting one and one-half hours per week to history. The sixth form covers in a thorough way the history of the ancient world from earliest times in Egypt to the adoption of Christianity as the official religion of the Roman Empire. The development of the French, Germans, English,

<sup>1</sup> England, Board of Education, *Special Report* (1911), vol. 24, p. 136.

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and Arabs to the time of the Renaissance is the work of the fifth form. The fourth form deals with the period up to the French Revolution; while the third spends a whole year upon the developments of the nineteenth century. While political and military terms dominate the skeleton of the outline, customs, economic conditions, culture, education, and religion receive considerable attention. Illustrations of this are a thorough economic interpretation of the results of the Crusades, a study of industry, commerce, mercantile marine, and navy under the ministry of Colbert, the development of transportation in modern times, etc. The final topic in the cycle's work shows the trend of the interpretation: —

*Government of France in the nineteenth century:* Central government; ministers and chambers. Franchise: qualification for franchise; money qualification for franchise on the basis of taxes paid; universal suffrage. The Press: the right of meeting and association. The Democracy: the right of voting; popular education; compulsory military service. Labor laws from 1848 onwards.<sup>1</sup>

<sup>1</sup> England, Board of Education, *Special Report* (1911), vol. 24, p. 58.

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At the end of the *First Cycle*, therefore, at the age of fifteen or sixteen, the French secondary schoolboy has not only completed a history of his own country, but, building upon that, has made a rather careful survey of the history of the world, so far as it has influenced his native land. The point of view has been different, placing its interpretations more upon economic and social bases. Were the boy to drop out here, he would probably have a better knowledge of history that is useful to him than the usual American graduate of a high school who has elected all the history open to him.

*The Second Cycle*, three years' work, covers the field from the time of Charlemagne to the present day. The attack is more thorough, the interpretation broader, the character of the work, according to competent observers, more advanced than freshman or sophomore history in American colleges. The final topic is quoted to show the type of work: —

General features of contemporary civilization: —

Armed peace. Alliances. Importance of economic interests. Imperialism. Respect for the rights of in-

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dividuals. Abolition of slavery and serfdom. More lenient penal legislation.

Religious liberty. Suppression of state religions.

Political liberties; representative government; principal forms of government.

Formation of democratic government; right of voting; universal suffrage. Popular education. Military service.

Social doctrines and labor legislation.<sup>1</sup>

Students who have elected the Latin course take in addition two hours a week for two years in the history of the ancient world. Here as above the interpretation is broader, and the work more thorough. For illustration, the topic following the Roman conquest of the Mediterranean is cited in full: —

*Consequences of the conquests*: Introduction of Hellenism; Scipio and Cato. Transformation in social habits; dwellings, clothing, meals, games. Transformation in religion, intellectual life, morals. Social transformation; disappearance of the middle class; clientship. Nobility, knights, plebeians, slaves.<sup>2</sup>

<sup>1</sup> England, Board of Education, *Special Report* (1911), vol. 24, p. 63.

<sup>2</sup> *Ibid.*, p. 59.

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This system applied to other subjects has worked out in the same way. During the *First Cycle*, science is studied in an elementary and general way, botany, zoölogy, geology, physics, and chemistry being taken up. Opportunity for further work, and more thorough specialization is given later. The French boy, at fifteen or sixteen, has already read certain works of Nepos, Justin, Cæsar, Curtius, Virgil, Ovid, and Livy. The *Second Cycle* broadens out practically the same field. In mathematics, at the close of the *First Cycle*, work has been done in second degree equations with one and two unknown quantities, graphs, logarithms and antilogarithms, compound interest, elementary surveying, geometry (planes and straight lines in space), and geometric drawing.

This arrangement of courses on the Cycle Plan makes for great economy. Not only is the field covered in a very thorough fashion and added interest aroused through the knowledge that work well done one year will be advantageous in the next, but, more important still, the course is so arranged that boys who are compelled to leave



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school before graduation will not find their time wasted.

It must be admitted, however, that in France and Germany, as well as in this country, the course is planned primarily for the graduate. The boy who is forced to drop out is ill-prepared for the life he is to lead, probably less well-prepared than those in this country. This is due primarily neither to the school nor the curriculum. The cause lies in the greater need for efficient preparation found in the closer competition of an older civilization. It is better than if there were no such system. Adapted to our conditions, it would surely prove more successful.<sup>1</sup>

Japan, Canada, and the United States, on the

<sup>1</sup> There is some doubt about the success or lack of success of the Cycle System for foreign conditions. Certainly the boy does not enter the life-work for which his parents intended him. In Prussia the boy dropping out at fifteen or sixteen, having passed his examinations, is eligible, along with the graduates of the *Mittelschule*, to the preparatory classes in the higher schools of machine construction, to the postal and telegraph service, to the normal preparatory school, to the state horticultural schools, and as an apprentice for the career of expert in vine-growing. Many of these boys become clerks in stores, etc. (*Neuordnung des Mittelschulwesens in Preussen* [Berlin, 1912], p. 65.)

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other hand, differ in that their secondary schools depend upon the elementary for preparation. In Canada entrance examinations are required for admission to the high school; in Japan only the brightest boys are allowed to continue. In the United States any graduate of the elementary school with the means and ambition may advance to the high school. Elementary education has always been for the masses; secondary education for the classes; and it is upon this as a tradition that our schools were founded. There is nothing in our tradition to foster the articulation of the elementary and secondary schools. Their origin was quite different. No wonder that the connection is not close! Maladjustment is indicated by the thirty per cent that drop out during the first high-school year. Over a hundred principals gathered together agreed that the most knotty problem facing them was provision for that ill-assorted, diversely prepared, mature and immature group of boys and girls representing the first-year class. Surroundings are strange. They are new to the type of work. They are not accustomed to being moved from class to class. They

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do not know what to do with a study period, and often never learn. Many are accustomed to have the next day's assignment written on the board. They are confused. There is in the United States, therefore, an educational waste in the transition from the elementary to the secondary school.

Further, the work of the seventh and eighth grades too often is poorly done. Problems of discipline are severe. It is almost impossible for one teacher thoroughly to master all of the subject-matter. The whole year of the eighth grade is often spent in review. The agitation for departmental work, prevocational schools, vocational schools, and part-time work, the fact that elimination in the sixth, seventh, and eighth grades is very high, and the curious result often shown in experiment and practice that six, seven, or eight years of elementary-school work seem to show but little difference in the end, point to a belief that there is a waste of time and effort here.

The high-school graduate who has completed collegiate and professional courses is, comparatively speaking, a fortunate individual. He sums up within himself the goal of our present educa-

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tional system. His algebra and geometry have been the gateway to higher mathematics, there to be applied to engineering, navigation, teaching, and the like. His foreign languages have given him ready access to the treasures of other peoples, hitherto unavailable for him; while his history, English, and sciences have shown results. Yet, where he has succeeded, twenty have failed, and in a sense they have paid for his education.

Little thought and less consideration have been given to that great group of secondary pupils who are destined never to go to college, never to finish the course, never to carry their subjects far enough to arrive at real ends. To be sure, they have received their proportionate amount of mental discipline, but compared to that which they might have received, their fare is meager. Taking the figures from the Report of the Commissioner of Education for 1913 for the secondary schools of the Southern States, for every one hundred in the first-year classes of the public high schools, there were seventy-four, thirty-nine, and twenty-one in the other classes; while for the private secondary schools the figures are

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one hundred, seventy-seven, fifty-five, and forty-one, the inference being that if a parent has money enough to pay tuition for his son, he also has strength of purpose enough to keep him in school. For the country as a whole Thorndike estimated that with a first-year class of one hundred, the other classes would average sixty-three, forty-four, and thirty. Ayres's computation was lower yet, being one hundred, forty-eight, thirty-five, and twenty-five. Strayer's estimate was similar. Over one fourth of the pupils in the secondary schools of the United States leave the high school with a small knowledge of elementary English, a little ancient history, algebra to quadratics, and the ability to say *mensa*, *mensæ*, *mensæ*. Not more than two fifths, and often as low as one fifth, pursue languages and mathematics far enough to achieve real results. There can never be economy in any educational system when seventy to eighty per cent leave high school with incomplete fragments before the end of the course, poorly equipped for the battle of life. We have one problem in the training of our leaders. We have quite as great a problem in making more



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adequate provision for that great group which at present has no choice but to start a course of study which it will never be able to finish.

The world blames the college for lack of economy, the college the high school, the high school the grammar school, the grammar school the primary grades, the primary grades the kindergarten, and the kindergarten the wide world that provides that type of children. The unfortunate thing is that each shifts the responsibility, and that there is a new start at each transition.

If, therefore, we would institute greater economy in the secondary schools of the United States, we must face the double problem: (1) How may we more closely articulate the elementary school and the high school, improving especially the work of the seventh, eighth, and ninth grades, encouraging continuity in the work, that there may be no effort wasted in unnecessary adjustment and that our future leaders may progress with greater rapidity? and (2) How may we make more adequate provision, both in the high school and in the elementary school, for that great group which is forced to drop out of school?

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There are many possible remedies. We may foster the introduction of departmental work in the upper grades, enable the teacher to specialize, make for better work in class, accustom the pupils to a variety of teaching, and thus provide an easier transition from the elementary to the high school. We may introduce vocational and prevocational schools, intermediate schools, junior high schools, and the like. After all, it makes but little difference what we call it. A rose by any name will smell as sweet. There is no real reason for such a great difference between the elementary and the secondary schools. Although one was traditionally for the masses, the other for the classes, to-day we live in a democracy. We believe in equality of opportunity, which does not mean identity of opportunity. We have but one type of public education for all, and the opportunity which the child has presented to him should depend upon his capabilities as he advances in his course. Therefore, it makes but little difference whether we extend the high school downwards, or extend the elementary school upwards, or introduce a new type of school.

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The real articulation of the elementary and secondary school depends not so much on the name of the school, nor upon its administrative organization, as upon the conformity of each to the standards in a democracy.

A subject should be placed in the curriculum of our schools not for its traditional value, but for the real use to be made of it in after life by the particular pupils who are to study it. By "use" is meant anything which will contribute to the earning of a living, the prolongation of life, the performance of the duties of citizenship, moral and religious uprightness, and the proper spending of the leisure period.

Such subjects should not be classified as "elementary" or "high-school" subjects, because in this country they traditionally have become a portion of the work of certain schools. They should be introduced as early in the course as is consistent with efficient teaching, that those students destined to graduate may have as thorough training as possible, and that those who are forced to drop out may be better equipped.

Some phase of the Cycle System should be

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adapted to our schools. We should so group the subjects that students who are forced to leave may at least have introduction to the essential elements of the course. When these standards are followed, we shall have gone a long way toward the solution of the problem of the articulation of the elementary and the secondary school.

If we wish to confine ourselves to ideals and dream of the dim and distant future, we should advocate the immediate adoption of the six-and-six plan or one of its modifications in every school system of the United States. Certain changes would be made. We should revise the entire course of study, moulding the first six years to provide the fundamentals for all walks of life. At the end of the sixth grade we should turn the children out able to read, write, and express their thoughts in good English, able quickly and accurately to perform the fundamental operations in arithmetic, familiar with geography, history, nature study, and hygiene, and competent in the simple phases of cooking, sewing, manual training, and agriculture. We should then differentiate the work. We should determine, through

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some at present unperfected process, the future vocations of these children, and to give them opportunity for training for their work, provide college preparatory, general, scientific, commercial, home economics, prevocational, industrial, agricultural, music and art courses, and the like, depending upon the needs of the community. It would be well to institute a break at the close of the ninth grade for those who are to drop out. We should encourage children to remain to this point; and that those who wish to change their line of work may not be too highly penalized, we should provide easy transition from group to group. Then we should have articulated the two schools.

It need not be advocated that we extend the present high-school course over a period of six years. We should push it forward and complete it earlier. A boy or girl ought successfully to make twenty to twenty-two units in six years. If we wish to prepare for entrance to college, five high-school years beyond six elementary-school years should be sufficient. It may be objected that boys of twelve or thirteen are too young to



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start serious work. German and French boys at that age are already reading Nepos and Cæsar, and are solving propositions in geometry. Modern language work is greatly facilitated by an early beginning. Dr. King found that of the boys who entered the Iowa high schools those of thirteen years of age had the best chance of graduation and Dr. Van Denburg found the same thing in New York City.<sup>1</sup> This argument is complicated by the factor of selection, a just inference being that pupils who were bright enough to pass all our barriers and enter high school at that age were bright enough to carry the work easily. If pupils are to need either a cultural or vocational education, why should they not start it earlier?

A few school systems of the United States have already adopted the six-and-six plan, effectively articulating the schools. Many more have adopted the organization, improving the shell, but leaving the core much the same as before. In the majority of our school systems, however,

<sup>1</sup> King, *The High-School Age*.

Van Denburg, *The Elimination of Students in Public Secondary Schools*.

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such a change will come only after long agitation in winning over legislators, school boards, superintendents, and principals, and in a vital reorganization of school law. Agreeing upon the principles involved, therefore, the duty of American schoolmen is neither to quarrel about the ultimate end, nor, when failing to achieve the ideal in one great reorganization, to give up the attempt and settle down discouraged. There are many steps which may be taken *this year* in any system which will go far not only in making better articulation, but in winning public support for the ultimate reform and in preparing the school system for real progress. It is possible to make haste too quickly in school reform. What are some of these steps which may be taken immediately?

First, let us accept every opportunity to strengthen the bonds that already exist between the elementary school and the high school. The poor articulation is due not only to different subject-matter, methods, and organization inherited from the past, but also to the enforced isolation of the two groups of teachers. Few high-school teachers know with any degree of precision just

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the work that the pupils have previously done. Conversely, few elementary-school teachers know exactly the demands that will be placed upon their pupils when they enter high school. Why not introduce a plan of conferences of both groups, discuss these points, and make some provision for visitation on the part of the teachers? Upper-grade science should help materially in high-school science. History, English, and practical arts could be built directly upon that which has gone before. Each group could improve its methods of teaching by the incorporation of the good schemes of the others. Further, needless or useless repetition of the same subject-matter could be eliminated, thus saving time. The elementary-school teacher can prepare quite efficiently for high school. The high-school teacher should not look down on the elementary school, feeling that he has to begin all anew. Under our present system, step by step, we may do a great deal toward articulation through the modification of methods and subject-matter which would come as a result of greater knowledge of other conditions and the consequent sympathy due to

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visitation and meeting of elementary- and high-school teachers.

Second, let us question ourselves very closely as to the value of the subject-matter to the pupils whom we teach. Forget, if possible for the purposes of experiment, that there ever was such a thing as a curriculum peculiar to the elementary or secondary school. If Latin is needed by a boy or girl who is planning for professional life, why not start it earlier? If business arithmetic and bookkeeping are more valuable for the prospective business man or merchant than algebra or geometry, why should this stop with the seventh or eighth grade and not continue to the tenth or eleventh? If modern languages can be taught to advantage to younger children and there is any likelihood that they will ever need them, why not begin such language study earlier in the course? It is not advocated that we try to change the whole curriculum at once. Try one so-called elementary-school subject in the high school, and one so-called high-school subject in the elementary school. Try them on groups of children that will probably need them. Watch the result! It

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ought to mean increased interest and better teaching, and it might result in the elimination of useless subject-matter rather than in the elimination of practical-minded pupils.

Third, let us try to select from that which we already give, a consciously chosen curriculum for those who are not planning to go to college, for those who will in all probability leave school before graduation. In making this selection, we should follow certain standards. (*a*) No subject should be included which cannot be studied with profit within a period of two years, the applications of which touch in a broad way the life of non-professional people. This would at once eliminate foreign languages in most sections of the country and mathematics other than arithmetic and bookkeeping. It would also eliminate courses in history which come no nearer the present than the year 1000 A.D., science without applications, and English which is formal and aimed at college entrance alone. (*b*) Some sort of easy transition should be provided from group to group, that those who change their minds may not be too highly penalized. (*c*) Combination of



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the two courses should be made wherever possible, since it is financially impossible for most of our high schools to provide two entirely separate and distinct courses. (d) The students of the high school are entering hundreds of occupations. It is consequently impossible, except in the largest cities, to provide specific vocational training for all. In the South the only vocational courses offered in most of the high schools would be agriculture for the boys and home economics and teacher training for the girls. The high-school course should be primarily *cultural*, seeking to give the elements common to all vocations and to life at home, and *vocational* only where a large number of pupils are planning to enter the same field.

How may we, keeping the four-year organization of our high school, take the next step in the direction of better provision for the non-college preparatory group?

The college preparatory course would remain much the same as at present, giving work in foreign languages, mathematics, English, science, and history. We could organize a non-college

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preparatory course running parallel, using as many of the same subjects as possible. History, English, and science would form the nucleus, the pupils being together in these classes. The real ends of mathematics and foreign languages cannot be achieved in two years. The applications of the latter, in reading and speaking, come only after long, hard study; while the use of algebra and geometry is chiefly in their application to higher mathematics. Consequently, these subjects would be confined to the college preparatory course. While one group would be occupied with mathematics or a foreign language, the other could elect agriculture, practical arts, home economics, business or household arithmetic, book-keeping, economics, or the like. Each of these would have a direct bearing upon the lives of the pupils, if properly taught. Each should be the means of sustaining interest in the course. Each should react to the betterment of the community about the school. Such a high-school program would appear as follows, the courses in common being given in capitals: —

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## POSSIBLE HIGH SCHOOL PROGRAM FOR THE FIRST TWO YEARS

| COLLEGE PREPARATORY<br>COURSE | COURSE FOR THOSE NOT PRE-<br>PARING FOR COLLEGE |
|-------------------------------|---|
|-------------------------------|---|

### *First Year*

|                  |   |
|------------------|---|
| ENGLISH          | ENGLISH   |
| GENERAL SCIENCE  | GENERAL SCIENCE                                   |
| HISTORY          | HISTORY   |
| Algebra          | Business or Household Arith-<br>metic             |
| Foreign language | Agriculture, Practical Arts, or<br>Home Economics |

### *Second Year*

|                    |   |
|--------------------|---|
| ENGLISH            | ENGLISH   |
| PHYSIOLOGY-HYGIENE | PHYSIOLOGY-HYGIENE                                |
| HISTORY            | HISTORY   |
| Geometry           | Economics   |
| Foreign language   | Agriculture, Practical Arts, or<br>Home Economics |

Much modification of such a program is possible. Many such courses are given. This is advanced merely to illustrate the principle. Extra teaching force would usually not be necessary. Most of these subjects are already given in our small high schools.

Only two matters need attention to make the plan efficient. First, better organization is

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needed to find out the plans and capacities of students, that they may be more wisely directed at the beginning of their work. Teachers often feel that they are doing a service in advising a pupil to take Latin or algebra, when there is but little chance of that pupil ever going to college. In most cases such advice, instead of a service, results in a real injury. It puts the pupil into abstract work. It discourages interest on account of remote ends. It too often throws a pupil on the world not prepared as he might have been. On the other hand, a pupil, wisely directed into the general course, may, at its completion, be encouraged to remain longer in school, and by a little extra work satisfy the college entrance requirements.

Second, the teacher must apply the principles of the Cycle System to the work in English, history, and science. He must keenly realize that he is responsible for the *final education within two years* of more than half the members of his class. He cannot wait four years to achieve results. This will cause a change in method and subject-matter. The science teacher will be compelled

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to bring out the greatest things in his field which people need to know, and apply them in class. When history teachers realize that those pupils who drop out as well as those who continue will be voting in six years, and running the country in two decades, it is hardly probable that the majority of pupils will be doomed to know ancient history better than modern problems. Civics, Industrial History, Community Industries, or Modern Political Problems will not be strange names for the first-year high-school work in history in the future. In English, there will be more enjoyment of good literature and less dissection, more letter-writing and oral composition, and fewer treatises on "What I Saw on my Way to School," or "Spring." Such a radical point of view would do no harm even in the college preparatory classes.

These steps toward the articulation of the elementary and secondary school may be taken in greater or less degree in every school system of the United States. Many have already taken them. All can try them next year. It will be highly worth while for us to take every opportu-



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nity to strengthen the bonds that already exist, to experiment cautiously in the adaptation of subject-matter to the real needs of pupils, and to introduce a break in the course better to serve the pupils who drop out. This done and the results of the experiments spread abroad, our schools will be in much better position to take the second step toward the adoption of the six-and-six plan, or the twelve plan, or whatever scheme may prove to be the ultimate and ideal solution of the difficulties of organization of the program of studies.

## IV

### ECONOMY THROUGH THE IMPROVEMENT OF INSTRUCTION

It would be possible for us both to lengthen the time devoted to study and to organize the program of studies on more efficient lines, and yet effect no great economy if our methods of teaching were to undergo no improvement. The easiest source of economy, yet the most intangible, lies here. We should have to convince no superintendent, win over no school board, change vitally no program of studies, and yet effect great economy if only our teachers were to teach in a more efficient way. In certain features of method the foreign schools excel.

In the German secondary school the instruction hour is divided roughly into three parts: a review of the previous work, consideration of the topic for the day, and the assignment or consideration of the next day's lesson. The teacher speaks slowly and distinctly. There is no repe-

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tition. But one thing is taken up at a time and that little is done well. In the assignment, usually fifteen minutes in length according to the estimate of one observer, the lesson is covered carefully, mistakes guarded against, pitfalls pointed out, the problem carefully outlined and explained. Everything is made ready for close and efficient work at home. This, of course, saves a great deal of the pupil's time, and is at bottom one of the reasons why the German boys are able to carry so many hours of work per week. With our present system of page assignment and of recitation, meaning the recitation of work attacked in blind fashion in the bustle of the study hall or under unfavorable conditions at home, I doubt if it would be possible for our pupils to prepare more work. It is not claimed that the German form of assignment is the best possible, but it is far better than the take-the-next-sixty-lines plan in vogue in our schools. In general, in the high schools of the United States there is no such thing as an assignment meaning the first step in good mental work.

Another element in method economy effected

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by the foreign schools lies in the correlation of subject-matter. In Germany all the work is unified about one idea, "Germany is the greatest nation in the world, and it is going to be greater." The vernacular and the modern languages, science and history and geography, are all tied up with each other and with the other subjects of the curriculum. The teacher of German may assign a composition upon the Latin that has been translated at the last hour. It is not unusual for a history class, for instance, to spend time upon the technical elements of a chemical discovery, the effect of which has been to advance the cause of the Fatherland. The teacher is so thoroughly familiar with all the work that the class before him has had, that he can draw without delay upon all their previous work. The teacher will come to a point, such as the "wheat industry in France," in connection with a study of the geography of the land. "You remember two years ago you studied the wheat plant in *Naturkunde*. What conditions are favorable to its growth?" The class recalls the point and the lesson proceeds. That much time, at least, has been saved.

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It advances the lesson. It reviews previous work. The most striking instance of this use of previous work is in the history work in the French *lycées* (see above), where the basic notebooks and topical outlines used by the advanced classes were prepared when the pupils were little fellows in the lower classes. This economy depends upon two factors: a highly organized course of study, the knowledge of which the teacher may count upon, and teachers sufficiently well trained to be familiar with more than one subject, and interested enough to be acquainted with the work of the rest of the school.

The foreign teachers are very well trained. The *agrégation* in France, the mark of the expert scholar and teacher, is more to be desired than fine gold; while the examination for the Ph.D degree in Germany is far less difficult than the teachers' examination. There, teachers must qualify in four subjects, two majors and two minors. Versatility is a prerequisite.

When the higher work is planned to build upon that already done; when teachers are masters of related subjects as well as their own; when they



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are thoroughly familiar with work in other and previous classes, — then and then only can correlation of subject-matter be more than a phrase. To establish it in this country will require enormous effort, better-trained teachers, a continuous curriculum, and a new point of view. It ought eventually, however, to effect an appreciable saving of time.

The greatest economy in methods of teaching in the German secondary schools, however, lies in the fact that they consistently and continually contribute to the end that they have in view. The tremendous efficiency of the German nation in industry in times of peace, and in solidarity, patriotism, and unity of purpose in time of war, rests upon an obedient, God-fearing, patriotic, self-supporting, unthinking proletariat guided by an efficient, progressive, thinking, privileged bureaucracy. The elementary schools train children to follow. The secondary schools train children to follow. It is only in the universities, free, lax, and undisciplined, that the boy, selected on account of his ability, may do as he pleases, vary as his capabilities, tastes, and inclinations allow,

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and express his own individuality, that the nation as a whole may progress. The leaders are the result of constant elimination. New ideas come from the top. The great mass has but to follow and obey. The secondary schools provide the tools which are to be used in the pursuit of later work. But the secondary schoolboy "learns," he does not "study";<sup>1</sup> he follows, he does not lead. Wholesale adoption of German methods in the United States, instead of effecting economy, would work great harm. Such imitation — and indeed we have too much of it — works contrary to the real need of the democracy in which we live. Efficient teaching in the secondary schools of the United States will come partially as a result of better-trained teachers, partially from a new idea of the function of the recitation, and partially from a sensible correlation of subject-matter; but the real economy, arising from the accurate arrival at the ends which our democracy demands, will come only when our teachers realize that the governmental experiment, started by

<sup>1</sup> *Lernen* applies to the elementary and secondary schools; *studieren* to the university.

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the founders of the Constitution for a select group, and extended to all the people by Jacksonian Democracy, will result successfully only when our schools all along the line turn out men and women able to think for themselves, capable of meeting situations upon the plane of reason. All of us are to share in the government. All of us in a relative way are to be leaders. Economical education in the United States of America can only be directed at such an end.

Method, in the educational sense, is the term denoting the process whereby a certain portion of the heritage and achievement of the race is consciously transferred from one generation to another; and its fundamental factors are the child as he is and the child as we wish him to be. The economical method is the one which certainly and efficiently changes the former into the latter. Efficient method demands, upon the part of the teacher, (1) exact ideas of the pupil as he ought to be in the future, or reasonably *definite aims*; (2) as complete a knowledge as possible of the pupil as he is, both as to the knowledge and habits already acquired and his ways of learning;

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and (3) a sensible and practical application of this theory to actual schoolroom conditions. We need progress in all three directions.

Modern literature on the teaching of history in the secondary school advances, among others, the following purposes for its teaching: History is designed to strengthen the reason, to train the judgment, to train in the selection of essentials, to train the imagination, to train the memory, to provide culture, to give one the historical attitude of mind, to give one many-sided interests, to cultivate enthusiasm, to train in written expression, to train in oral expression, to give a method of work, to give one the ability to use books, to cause intelligent voluntary action, to teach how to study, to organize facts, to broaden the mind, to explain present conditions, to give one the power to see into the future, to train morals, to set up high ideals, to build character, to give a basis for ethical judgment, to give one a love of truth, to train for citizenship, to inspire patriotism, to make for international peace, to provide for the leisure period, and to give one a body of facts. A similar collection is possible for

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almost every other subject. A certain lady spoke before the National Education Association as follows: —

I dare to cherish the hope that by this earnest, conscientious work of making notebooks, these children are learning the fundamentals of citizenship; thoroughness, accuracy, breadth of view; the power of neatness; the power to analyze; the power to construct; the power of sustained expression; the power of system; the power to carry out a plan; the power to look beneath the surface of an event for its cause; the power of suspending judgment; the power of patience; the power of efficiency; the power of truth.

Each of these aims undoubtedly has value. In all probability some few of them may be achieved. Yet the very fact that we are contented to aim in so many directions at once, and test our success by asking a pupil to *recite facts*, indicates not only that we do not know where we are going, but also that we are not on our way.

This is because we do not know the way in which children learn. Traditionally there was no inconsistency in aiming for all at once. So long as there was firm belief in formal discipline, in its



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extreme form, it was believed that any work sufficiently difficult, pursued in a thorough and faithful way, would help to fill the reservoir of wisdom, to be drawn upon at will in any direction which the individual might need. Psychology has not entirely disapproved of formal discipline. It does not deny all transfer of training. Because work in marking A's, typewriting, adding, solving puzzles, and formal grammar has not been productive of great results in other lines, it does not prove that Latin or mathematics or history may not have wide transfer. It does point to the probability, however, that where such transfer has occurred, the result is due to common elements of some sort. One can readily see, taking this conception, that the elements most likely to be common are habits of work, methods of attacking problems, and ability to handle evidence, rather than specific bits of subject-matter which as a rule have their lonely place. The old work-in-any-way-you-please-so-long-as-it-is-hard plan undoubtedly yielded habits of concentration and methods of work suited to bookish learning, and often gave in this way splendid preparation

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for bookish teaching in college. But preparation for translating ancient tongues in college is not necessarily preparation for life, particularly life in a real democracy where every citizen must bear the burden of leadership in some form, and where the whole philosophy of the State lies not in coercion by the few, but in the rational coöperation of all citizens in the affairs of life. The greatest element, common to all walks of life, which our schools must give, is the ability to do one's own thinking for one's self, to analyze and to solve without delay the many problems which are continually confronting each and every one of us. The old theory believed that thinking ability was secured through any sort of work that was hard; and it confused ability in formal college work with leadership in life. The new theory believes that thinking ability is secured by having problems to think about, and many of them, and that, curiously enough, all thinking is tied up either with that which arouses your curiosity or that which is immediately useful. We think only when we have a problem; a "challenging difficulty" is the purport of Dewey's work, a problem

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the solution of which is worth while to us. The new psychology and sociology applied to education turn our attention away from the dim and distant future to the present, away from broad general values to specific uses. They break down the walls of the classroom and let the wide world in. We need discipline. No economy can be effected without that. But no longer is there a dualism of general training on the one hand and specific training on the other. The general training that is of worth to us comes through the specific.

This in turn has led us to a questioning of the real value of the subject-matter which we teach. No matter how long we go to school, no matter how perfectly our curriculum is articulated, no matter how efficient our methods in a formal sense, no real economy can be secured if the knowledge and training given are not connected with real uses in the world at large. "Uses," as shown above, do not mean the bread-and-butter-work-with-your-hands theory. Anything is useful which will contribute to the earning of a living, to the prolongation of life, to the proper perform-

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ance of the duties of citizenship, to moral and religious uprightness, and to the proper spending of the leisure period.

After a survey of the number of pupils taking various subjects in the secondary schools of Massachusetts, Horace Mann remarked in 1842:—

Can any logical reason be assigned why algebra, a branch which not one man in a thousand ever had occasion to use in the business of life, should be studied by more than twenty-three hundred pupils; and bookkeeping, a subject which every man, even the day laborer, needs, should be attended to by only a little more than half that number? Among farmers and road-makers, why should geometry take precedence of surveying, and among seekers after intellectual truth, why should rhetoric have double the number of followers of logic?

Many thinkers on secondary education from Montaigne to the present day have expressed similar views.

It is not intended here to criticize the subjects of our curriculum. The methods used are the subject of attack. Formal discipline turned our eyes away from use in the broad sense: modern in-

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vestigation and theory emphasize it more than ever. Latin has great use for the pupil, provided that the teacher knows what it is, and provided that he approaches the subject with the firm determination to show his pupils that use. If we are to have Latin in the curriculum, more of it should be taught. The average pupil gets the tool and then never does anything with it, nor does he realize the by-products that he has secured. Mathematics or English or history or science can be taught so that something will come of them. When teachers adopt the modern point of view, and put it into practice, certain changes will surely come. Phases of subjects, long useless, will be dropped. New phases of subjects, old and new, will be added. It is highly necessary that we teachers keep our eyes and ears open to possible economy in this direction, never forgetting the unfortunate boy or girl who must leave school early. This will eventually prove to be the great economy in our education.

Suppose, however, that the teacher has investigated the possible values of his subject; grant that he has made a careful study of psychology;



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assume that he is resolved to allow his pupils to think. He plans to search out applications of his subject, to approach it from the real needs of his pupils, to allow them to weigh values for themselves, and to encourage an individual approach on their part. He goes back to his old school. There is the same unwilling, immature, apathetic pupil accustomed to be *led*, to be treated as a machine. The old course of study is still on the desk. The college entrance examinations hang darkly in the distance. The principal is likely to walk in at any moment. Parents are apt to object, useful work being oftentimes the supposed function of the delinquent, truant, or negro school. How shrunken become the theories of the educator! How small the investigations of psychology! How attractive the dictates of tradition!

The practice of generations cannot be changed at once. We cannot transform our methods in a day. A combination of our common sense and our ideal must be our guide. At first we cannot hope to make everything immediately useful; but we can save a little from the wreck. Mathe-

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matics teachers are beginning to tie up their work with modern homes and industries and are trying to meet the needs of business life. Science pupils are learning, and what is more, are applying the principles of personal hygiene. The pink stomachs of the physiology books are giving way to the inspection of local food, milk, and water supplies; and measures are being taken by high-school pupils to prevent the spread of disease. Some high-school boys can fix electric bells. Occasional English pupils learn in class to enjoy Shakespeare and Burke. History pupils are beginning to read the newspapers, and can speak almost as intelligently of the latest presidential messages, or the European war, as they can of the progress of the Federal League or the latest fashion hints from Paris. Immediate ends give point to our work. We can tell where we are going and test for our success. If remote ends seem worthy, as undoubtedly they are, we are almost sure that immediate ends are way stations on the route. Our first step in the improvement of methods lies in knowing where we are going; the second, in being sure to be on our way. When the opportu-

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nity offers, as it will to every thinking teacher, we can temporarily omit the old routine, and begin as a group to search out the solution to the problem which has challenged us, giving the members of the class opportunity to do the same sort of mental work that they will so often be compelled to do in later life. A better knowledge of facts should result. In addition, the class will know their application. This done, occasionally, we may proceed to further refinements of method, necessary for a complete program of economy in education in a democracy.

## V

### ECONOMY IN SECONDARY EDUCATION AND THE COLLEGES

FOR the past century the colleges and universities of the United States have exerted a profound influence upon our secondary schools, and to-day, in a sense, the college limits and regulates the possibilities of the schools preparing its students. When the colleges demanded fourteen or fifteen units for preparation, the secondary schools met the demand. If the colleges were to encourage economy, the secondary schools would be much more likely to make provision. The colleges of the United States have the alternative either of moving forward progressively, accepting with good grace their share of the responsibility of instituting measures of economy in the schools, and encouraging high schools to do their part; or of hanging back, resting on tradition, waiting to have forced upon them reforms introduced into our

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schools by courageous and progressive secondary-school men.

The system of admission to college by examination has had the conspicuous advantage of encouraging boys and girls to test their ability whenever they feel prepared. The result has been thus to encourage exceptional pupils to enter college before the average group, and in this way time is saved in preparation for professional life. The system of admission by certificate, with its inspection of schools and standardization of work, despite its many advantages, has had the opposite effect. It has tended to pour all high-school pupils into the same mould. Still, the colleges today are not hard and fast in their requirements. Able boys and girls, jealous of their time and zealous in their search for just reward, complete their courses before schedule time, and receive credit for this extra effort by the colleges. But such reward comes only to the pugnacious individual who fights for his rights. To incorporate in the admission by certificate system the outstanding advantage of the admission by examination system, will require of our colleges some special em-



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phasis in their requirements encouraging economy, and in advertising credit for the adoption of measures pointing toward it.

The first question which arises is: *Will the colleges grant increased credit for longer terms of high-school work*, or will they still demand for their certificates four years, regardless of length? School boards will hesitate to lengthen school terms on account of the attendant expense; but if colleges fail to grant recognition for such work, the hesitation will be much more justified. The problem is not so much one of expense as of expense without adequate return. The same question arises in connection with the summer high school or the work at camp. This should be designed, not only for the boy who has failed, but quite as well for the boy or girl who wishes to get ahead. Dull pupils have elected this work in the past largely because they have been the only ones to receive recognition for it. *Will our colleges, therefore, favor the admission of boys and girls to college who have done additional work of an approved nature in summers, no matter whether they have remained four years in high school or not?* Will this be of

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service to the pupils? If so, how can it harm the schools? *Or may our colleges safely grant advanced credit for such work?* If our bright pupils are to enter professional life as well trained as the German or French boys, and at ages nearly similar, it is evident that either our colleges should encourage earlier entrance or the length of the pre-professional college course should be shortened, possibly by the grant of advanced credit. Not only should the colleges allow this when it is forced upon them: they should encourage it!

The usual program for high-school boys and girls comprises four important subjects a year for four years, yielding approximately fourteen or fifteen units. Bright pupils, dull pupils, stupid pupils, gifted pupils, genius, and fool, all go through the same grind. If, as is true in other aspects of human nature, there are wide variations, is it not probable that certain highly gifted boys and girls may be able to carry five courses with less strain and effort and more success than certain dull pupils may be able to accomplish with three? Students who finally enter college are a select group. Is it not likely that of this

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number many will be of unusual ability? *Will our colleges frankly recognize differences of ability by advertising that they will accept fourteen or fifteen units made by exceptionally successful students in less than schedule time?* Or is it better for the college to throw the whole responsibility on the high-school principal, who should encourage the pupils to try the entrance examinations at an early date? Some plan should be adopted whereby our leaders may enter professional life at an earlier date.

The six-and-six plan, or one of its modifications, will probably come in time. Its adoption, however, would be greatly hastened if college men were to stamp their seal of approval upon it. In the United States to-day some state universities admit students who have completed fifteen units of work beyond the seventh grade; others admit students who have completed fifteen units beyond the eighth grade. Despite the full year's difference, there is no distinction made between candidates from either type of institution in the graduate schools of our universities. There is an inconsistency here. Many advocates of the six-

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and-six plan believe, with the reorganization of courses in the seventh and eighth grades and the introduction of a continuous, unbroken course of study, that full college preparation can be made by the close of the eleventh grade. On the strength of this, will our colleges favor the statement *that they will accept especially capable students who have completed five years of high-school work beyond the sixth grade?* In most of the States of the Union this would effect a saving of time. In a few, where compulsory education begins with the sixth year, and where there are but seven elementary - school grades, the time element would not be changed. But the benefit to college preparatory work, with five years in which to do work now done in four, would be of great importance in added thoroughness and in the possibility of introducing new subjects better calculated to the needs of American children. Our colleges, favoring such a plan, and publishing their approval, have within their hands the best possible instrument for moulding public opinion and convincing school boards of the worth of the scheme.

The time has come when educators in the

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United States should look beyond their own special institution, not to criticize or to pass the responsibility to others, but to search out means of being of service. Our colleges and universities have within themselves, through their privilege of accrediting, inspection, examination, and paternal approval, the power of profoundly influencing secondary schools, and of helping them in a program of economy.



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